Best Practices in Workplace Surveillance:

A Multi-Component Model for Effective Special Topic Surveys

Kelley Frampton

Office of Safety, Health, & Working Conditions, Bureau of Labor Statistics

Sylvia Kay Fisher

Office of Survey Methods Research, Bureau of Labor Statistics

SURVEY PARTNERS [1]

- NIOSH (National Institute of Occupational Safety & Health): Federal agency responsible for conducting research and making recommendations for the prevention of work-related disease and injury; part of the CDC

- BLS is the "principal fact-finding agency for the Federal Government in the broad field of labor economics and statistics "

SURVEY PARTNERS [2]

- **BLS Office of Safety, Health, and Working Conditions (OSHWC) provides annual data from the Survey of Occupational Injuries & Illnesses about:**
  - number and frequency of fatal & non fatal work-related injuries & illnesses;
  - demographic profiles of injured & ill workers & characteristics of injuries & illnesses.

- **Statistical Methods Group (SMG) provides statistical support to these survey programs and is responsible for the survey sampling**

SURVEY PARTNERS [3]

- BLS Office of Survey Methods Research (OSMR) is a cognitive science group that helped develop the Survey of Respirator Use & Practices (SRUP)

- NIOSH, OSHWC, and the SMG have worked together in developing and implementing all stages of the respirator survey process

STUDY BACKGROUND & PURPOSE [1]

- **NIOSH (National Institute of Occupational Safety & Health) want to learn:**

    - **which industries actually use respirators**
    - **how respirators are used in U.S. establishments**
    - **whether establishments are following prescribed OSHA guidelines regarding use of respirators and respirator practices**

- **NIOSH contracted with BLS Office of Safety, Health & Working Conditions (OSHWC) to develop, design, and administer the survey**

MULTI-COMPONENT MODEL: DEVELOPMENT AND PURPOSE [1]

- SRUP is a first-time survey conducted by OSHWC in collaboration with an outside agency, focusing on a highly specialized topic

- Therefore, SRUP allowed OSHWC to pilot a new model that can be used to design many types of special-purpose surveys

- Emphasizing numerous steps and activities, the model be implemented when developing future special-purpose surveys with a national sample

MULTI-COMPONENT MODEL: OVERVIEW [1]

- **I - INTERNAL INSTRUMENT DESIGN: instrument design, pre-testing (including cognitive and field-testing), forms production**

- **II - CREATING INTERNAL SYSTEMS: sample design, internal systems (creation of survey editing and estimation systems)**

- **III – MANAGING STAKEHOLDER RELATIONS: managing relations with external bodies, including survey sponsor, sub-contractors, external reviewers, and OMB**

MULTI-COMPONENT MODEL: OVERVIEW [2]

- **IV – MANAGING EXTERNAL DATA COLLECTION:** managing data collection activities including non-response follow-up and data entry

- **V - INTERNAL DATA PROCESSING AND ANALYIS:** editing and refining collected data, follow-up activities, data estimation, and data analytic procedures

- **VI – JOINT PUBLICATIONS:** publication of results in several venues

MODEL COMPONENT STEP I: INTERNAL INSTRUMENT DESIGN [1]

- NIOSH provided a survey draft that formed the basis for the cognitive interview protocol

- Twelve cognitive interviews were conducted with large, medium, and small establishment in several industries

- Interview results were used to refine the survey form iteratively; feedback was also collected from NIOSH and external reviewers

- The survey form was revised using total forms design principles and finalized for a field test

MODEL COMPONENT STEP I: INTERNAL INSTRUMENT DESIGN [2]

- A field test was conducted with the SRUP, which was administered to N=120 US establishments from the OSH survey sample

- Telephone follow-up interviews were completed with:
  - respondents to obtain their feedback about SRUP
  - non-respondents:
    1. to obtain their data over the phone or by fax, and
    2. to learn their opinions
  - non-respondents who refused to complete the survey to learn why they failed to comply

MODEL COMPONENT STEP I: INTERNAL INSTRUMENT DESIGN [3]

- **Typical cognitive and field test results indicated that:**

  - some respondents reported they could only report training figures from their training records, not "actual" figures representing "actual/true" respirator use

  - large and medium establishments may have a great deal of off-site usage and are unable to report who *actually* wore a respirator

  - some respondents (esp. small establishments) did NOT know they were supposed to be fit testing or adhering to many OSHA guidelines; therefore, they do NOT maintain any records about employee respirator use & fit testing

MODEL COMPONENT STEP I: INTERNAL INSTRUMENT DESIGN [4]

- Cognitive testing, and field test results were used to develop a final version of the SRUP; partners agreed to the final version of the form

- An external printer produced survey booklets and envelopes for survey administration

- Partners agreed that these preliminary instrument development and design procedures were likely to improve respondents' ability to answer the complex SRUP questions

MODEL COMPONENT STEP II: CREATING INTERNAL SYSTEMS [1]

- **Sample Design**: 40,000 Establishments Sub-Sampled from the 1999 Occupational Injuries and Illness Survey
  - Establishments responded to the 1999 OIIS and were established contacts
- **Methodology**: Stratified probability sample based on geography, industry, and employment
  - Probability sample was selected based upon the proportion of expected number of establishments that use respirators (OSHA's respirator, PEL, PPE, and Construction PEL surveys)

MODEL COMPONENT STEP II: CREATING INTERNAL SYSTEMS [2]

- **The survey editing system developed edit specifications based on:**
  - survey skip patterns
  - inconsistent data
  - invalid data
- **Programmed SAS-based edit system**
  - <u>System output</u>: Edit sheets that identify surveys that need clarification
  - The update system allows the user to update records after the edit system is rerun

MODEL COMPONENT STEP II: CREATING INTERNAL SYSTEMS [3]

- **Programmed SAS-based survey estimation system**
  - Each case assigned a final weight that includes a nonresponse adjustment factor
  - Output tables identified jointly by BLS and NIOSH will be used in the BLS press release and BLS/NIOSH joint publication

MODEL COMPONENT STEP III: MANAGING STAKEHOLDER RELATIONS [1]

- Complex activities require coordination and continuous communication between the partners to prevent "mishaps"

- Frequent consultation with survey sponsor for technical expertise and at major decision points, including study initiation for planning purposes

- Communication with sub-contractors was formal and based upon a contract with specified tasks; included regularly scheduled updates

MODEL COMPONENT STEP III: MANAGING STAKEHOLDER RELATIONS [2]

- Status reports were provided to external reviewers (LRAC, BRAC) biennially; input from external reviewers was collected and incorporated within the survey design

- OMB clearance is required for both the field test and the actual survey administration; recommended changes were incorporated within the clearance packages

MODEL COMPONENT STEP IV: MANAGING EXTERNAL DATA COLLECTION [1]

- **Managing Data Entry**

  - Sub-contractor activities include:
    - creation of keying system
    - double-keyed entry
    - update BLS weekly on status of response outcomes
    - weekly delivery of keypunch files
  - Role of BLS in managing data entry:
    - oversight of activities
    - review of data files for accuracy

MODEL COMPONENT STEP IV: MANAGING EXTERNAL DATA COLLECTION [2]

- **Nonresponse telephone follow-up occurs after respondent fails to complete second mailing**
  - Sub-contractor trains staff about survey and refusal conversion procedures
  - BLS provides oversight, including initial training to subcontractor

MODEL COMPONENT STEP V: INTERNAL DATA PROCESSING AND ANALYIS SYSTEMS [1]

- **Editing and refining collected data**
  - Send keyed data through edit system
  - Schedules with errors requiring data clarification call backs are identified by edit system
  - Corrected schedules are used in final estimation tables
- **Data clarification call backs**
  - Train staff about survey and possible errors
  - Respondents are contacted to clarify data inconsistencies

MODEL COMPONENT STEP V: INTERNAL DATA PROCESSING AND ANALYIS SYSTEMS [2]

- **Data estimation**
  - Estimation program produces weighted and unweighted estimates
  - Estimates are transferred into table shells for desired publication tables

MODEL COMPONENT STEP V: INTERNAL DATA PROCESSING AND ANALYIS SYSTEMS [3]

- **Data Analysis:**
  - review estimates
  - analyze survey results
  - publish ONLY weighted data that meet reliability criteria to adhere to Commissioner's Order No. 3-93, which outlines BLS policy regarding the confidentiality of records:

    data collected, maintained by, or under auspices of BLS a confidentiality pledge will assure that individually identifiable data will be accessible only to authorized persons and used only for statistical purposes or purposes known in advance to the respondent

MODEL COMPONENT STEP VI: JOINT PUBLICATIONS [1]

- A major objective of this study is to publish survey results in several venues sanctioned by the participating partners:
  - BLS press release detailing statistical estimates, including respirator practices and usage
  - Joint NIOSH-BLS technical publication with extensive documentation of study procedures and statistical findings

LESSONS LEARNED (1)

- Allow extensive time early in the process for instrument development activities; incorporate these activities within the final project plan

- Effective instrument development activities up front may minimize error due to respondents' confusion about the survey and result in increased response rates

- Ensure continuous communication and frequent updates among the partners

LESSONS LEARNED (2)

- The usual oversight of in-house activities is not enough

- More resources needed than originally thought; allocate your resources wisely

- Plan wisely the logistics of the collection instruments moving through the pipeline

- Too much oversight is NOT a bad thing when using contractors